

The Johnson & Johnson Medical Devices Companies (JJMDC), through its CareAdvantage approach, collaborated with the University of California—San Francisco (UCSF) to improve operating room efficiencies for total knee and hip arthroplasty

In pursuing the goals of value-based healthcare—where reducing costs without sacrificing patient outcomes is paramount—operating rooms are often an area of focus. At UCSF, the Chief Administrative Officer and current President of the Academic Orthopedic Consortium (AOC), along with a UCSF Orthopedic Surgeon, were exploring ways to bring efficiencies to the OR. As a result, a three-way perioperative efficiency collaboration between JJMDC, AOC, and UCSF was launched to help address the challenges UCSF was facing in regard to inefficient use of institutional resources, especially as it related to JJMDC products.

With larger-than-needed instrument configurations, UCSF was facing higher sterilization costs and longer surgery times, and staff were burdened by heavy trays. The hypothesis was that by streamlining and standardizing JJMDC instrument use in total knee arthroplasty (TKA) and total hip arthroplasty (THA) procedures, UCSF could lower operating and processing time, cost, and waste.

The results were noteworthy, with a substantial reduction in the number and weight of JJMDC trays and JJMDC instruments processed. In addition, there was a reduction in setup time for TKA procedures, and cost savings for UCSF. Staff surveys also revealed an increase in staff satisfaction with the new tray configuration and an overall enthusiasm for the program.¹

[The new tray optimization] helped address an issue that has always been a problem for us—the number of trays, the weight of those trays, and the number of devices in each tray.

—Dr. Stefano A. Bini, UCSF OR Staff/Surgeon

To learn more please visit www.CareAdvantageJJMDC.com or email CareAdvantageJJMDC@its.jnj.com.

References

1. Capra R, Bini S, Bowden D, et al. Implementing a perioperative efficiency initiative for orthopedic surgery instrumentation at an academic center. In Review.
2. Stockert EW, Langerman A. Assessing the magnitude and costs of intraoperative inefficiencies attributable to surgical instrument trays. *J Am Coll Surg*. 2014;219:646-55.
3. Improving Perioperative Efficiency—Tray Optimization (Knee/Hip) Report, 2017. Ethicon, Inc.

Needs Identification

According to an analysis of instrument utilization per tray across several specialties, less than 25% of instruments prepared for surgery are used during a given operation.² The result is a large percentage of unused instruments, which still require costly sterilization and significant time spent on handling and setup. The UCSF TKA and THA teams were already highly-efficient, taking only 94.6 minutes per a TKA procedure compared with the National Procedure Time of 100 minutes;³ however, the hypothesis was that streamlining instrumentation could help reduce unnecessary preparation and decrease costs and time of procedures as a result.

Keeping in mind the CareAdvantage belief that solving starts with listening, the JJMDC CareAdvantage team partnered with two experienced surgeons at UCSF to identify optimized JJMDC tray configurations for their procedures. During the tray optimization exercise, the Health Economics & Market Access (HEMA) team worked with the surgeons to eliminate instruments that were infrequently used and created made-to-order trays in an attempt to streamline the JJMDC instrumentation and ultimately reduce the time and cost of procedures using these instruments.

The HEMA team deployed a systematic approach to design and execute a study to determine the impact of the new tray configurations. The primary endpoint of the study was OR setup time, which is defined as the period between wheeling in the first instruments and the time at which all instruments are ready on the back table for surgery. Secondary endpoints included clean-down time, total OR time, number of trays and instruments being processed, tray weight, number of trays in blue wrap vs rigid sterile containers, and cost estimates based on the observed parameters. In addition to the outcomes measured during procedures, provider and staff satisfaction with the intervention was assessed with surveys pre- and post-intervention.

Pre- and post-implementation data points were collected by JJMDC with the OR Data Tracker, a time and motion app designed to collect data on specific components of the surgical process. Data from the OR Data Tracker was used to determine the impact of the changes made.

Primary and secondary endpoints were tracked in 38 procedures prior to implementation of optimized JJMDC instrumentation trays. After analyzing baseline metrics from these 38 cases, it became clear that there was an opportunity to reduce the number of JJMDC instruments that were being sterilized and handled for TKA and THA procedures. Once tray optimization was implemented, the teams tracked 58 further procedures to compare with the pre-implementation data.



Capabilities

1. Systematic Approach to Data Collection, Analysis, and Publication

During the pre-implementation Tray Optimization Analysis, JJMDC studied instrument tray configurations; developed tailored recommendations; and engaged clinicians and administrators to carry out the recommendations. During implementation, the JJMDC OR Data tracker app was used to track and analyze key phases of the perioperative process, from OR setup time to clean-down time. This tool allowed for the analysis of case time performance versus baseline, as well as identify specific delays. Ultimately, the systematic approach led to robust data collection with results to be shared in an upcoming publication.

2. Customized Implementation

By leveraging clinical and product expertise, and working closely with surgeons and clinical staff, the JJMDC team was able to determine which instruments were being used, and with what frequency. As a result of this collaboration, JJMDC trays were streamlined from 22 down to 8.5 (2.5 trays for TKA and 6 for THA). This reduction not only delivered significant sterilization cost savings, but also reduced setup time by 3 minutes across all procedures.³

Delivering Results

Overall, the collaboration between JJMDC, UCSF and AOC reduced OR setup time, the number of JJMDC trays and instruments needed, and costs associated with sterilization. Setup time post-implementation decreased by 6 minutes, making total TKA procedure time 88.6 minutes versus the national average of 100 minutes.³ The optimized instrumentation configuration is estimated to provide an annual savings of \$160,000 in sterile processing costs. Environmental impact is also reduced, due to less use of blue wrap, natural gas, electricity and water. In addition, if decreased setup times can be maintained while stabilizing clean-down time, projected savings of \$99,000 would result from the reduction in total OR setup time.¹

Cost impacts*:



Staff surveys also revealed an increase in surgeon and staff satisfaction with the new tray configuration and an overall enthusiasm for the program itself. In fact, 60% of respondents in the surgeon and staff survey felt that the program offered additional value over other facility-led programs at UCSF, and the same number (60%) agreed that the workload/time commitment required during program implementation was reasonable.¹

These efforts resulted in a manuscript for publication in a peer-reviewed journal, which will be shared more broadly once published.

*These are examples that are specific to JJMDC/Ethicon products only and do not guarantee or predict future results, which will vary depending on individual circumstances.

Key Success Factors

1. A dedicated surgeon champion
2. Experienced field sales organization leveraging their clinical and product expertise to work closely with the surgeons and staff
3. High alignment between hospital administration, physicians, and JJMDC
4. Allocating appropriate budget for custom trays after careful analysis of optimal tray configuration
5. Dedicated field-based teams providing project management and evidence generation expertise and start-to-finish project execution, metrics, and reporting

This is one program that provides an incremental advantage and is something that is implemented fairly easily and is also a staff satisfier.

-Dr. Thomas Parker Vail, UCSF OR Staff/Surgeon